

CASE NO.: ARC920010090US1

Serial No.: 10/042,652

March 31, 2008

Page 2

PATENT

Filed: January 8, 2002

1, 2 (canceled).

3. (currently amended) The method of Claim 17, wherein the combination is a hash function of a concatenation of the channel key  $K_c$  and session key  $K_s$ .

4-6 (canceled).

7. (currently amended) The method of Claim [[6]] 17, wherein at least one of the providing acts is undertaken in a point-to-point communication.

8. (currently amended) The method of Claim [[6]] 17, wherein at least one of the providing acts is undertaken as part of a broadcast.

9-11 (canceled).

12. (currently amended) The method of Claim 1[[0]]Z, comprising selectively updating the session key block.

13. (original) The method of Claim 12, comprising updating the session key block by encrypting an updated session key with at least the encryption scheme  $B^R_{s1}$ .

14. (canceled).

1053-130.AM1

CASE NO.: ARC920010090US1  
Serial No.: 10/042,652  
March 31, 2008  
Page 3

PATENT  
Filed: January 8, 2002

15. (currently amended) The method of Claim 1[[4]]Z, wherein the new channel key  $K_c'$  is sent in a message that is split.

16. (currently amended) The method of Claim 1[[4]]Z, wherein the new channel key  $K_c'$  is refreshed using plural messages.

17. (currently amended) ~~The method of Claim 14, A computer-implemented method for~~  
securely transmitting multicast data, comprising:

encrypting at least one title T with at least title key  $K_T$ ; and

encrypting the title key  $K_T$  with at least one channel-unique key  $K_{cu}$  using at least one encryption function S to render a multicast data channel encrypted as  $S_{K_{cu}}(K_T)$ ,  $S_{KT}(T)$ , wherein the channel-unique key  $K_{cu}$  is the result of a combination of a channel key  $K_c$  and a session key  $K_s$ , wherein the session key  $K_s$  is encrypted with at least a first encryption scheme  $B_{s,1}^R$  to render a session key block, further comprising providing at least one player with device keys  $K_d$  to activate the player and providing the player with the channel key  $K_c$  and the session key block, wherein the player can determine the session key  $K_s$  from the session key block using the device keys  $K_d$ , further comprising periodically refreshing the channel key  $K_c$  to enforce subscriptions, wherein a new channel key  $K_c'$  is encrypted with at least a second encryption scheme  $B_{s,2}^R$  and wherein the encryption scheme  $B_{s,2}^R$  includes:

assigning each player in a group of players respective private information  $I_p$ ;

1053-130.AM1

CASE NO.: ARC920010090US1  
Serial No.: 10/042,652  
March 31, 2008  
Page 4

PATENT  
Filed: January 8, 2002

partitioning players not in a revoked set  $R$  into disjoint subsets  $S_{11}, \dots, S_{1m}$  having associated subset keys  $L_{11}, \dots, L_{1m}$ ; and

encrypting the session key  $K_S$  with the subset keys  $L_{11}, \dots, L_{1m}$  to render  $m$  encrypted versions of the session key  $K_S$ .

18. (original) The method of Claim 17, wherein the encryption scheme  $B_{12}^R$  further includes partitioning the players into groups  $S_1, \dots, S_w$ , wherein " $w$ " is an integer, and the groups establish subtrees in a tree.

19. (original) The method of Claim 18, wherein the tree includes a root and plural nodes, each node having at least one associated label, and wherein each subset includes all leaves in a subtree rooted at some node  $v_i$  that are not in the subtree rooted at some other node  $v_j$  that descends from  $v_i$ .

20. (original) The method of Claim 19, wherein the revoked set  $R$  defines a spanning tree, and wherein the method includes:

initializing a cover tree  $T$  as the spanning tree;

iteratively removing nodes from the cover tree  $T$  and adding nodes to a cover until the cover tree  $T$  has at most one node.

2053 130.AM1

CASE NO.: ARC920010090US1  
Serial No.: 10/042,652  
March 31, 2008  
Page 5

PATENT  
Filed: January 8, 2002

21. (original) The method of Claim 19, wherein each node has at least one label possibly induced by at least one of its ancestors, and wherein each player is assigned labels from all nodes hanging from a direct path between the player and the root but not from nodes in the direct path.

22. (original) The method of Claim 21, wherein labels are assigned to subsets using a pseudorandom sequence generator, and the act of decrypting includes evaluating the pseudorandom sequence generator.

23-40 (canceled).

41. (currently amended) A computer-implemented player for decrypting streamed content, comprising:

at least one device key  $K_d$ ; wherein the player means for decrypting a session key  $K_s$  using the device key  $K_d$ ; wherein the player also means for decrypting a channel unique key  $K_{cu}$  using at least the session key  $K_s$ ; and the player further means for deriving a title key  $K_T$  using at least the channel unique key  $K_{cu}$ , the title key  $K_T$  being useful for decrypting content.

42. (original) The player of Claim 41, wherein the content is multicast to the player.

43. (currently amended) The player of Claim 42, wherein the player ~~includes means for~~ receives streamed content, and the content is streamed to the player.

44. (currently amended) A computer program device, comprising:

1053-130.AM1

CASE NO.: ARC920010090US1

Serial No.: 10/042,652

March 31, 2008

Page 6

PATENT

Filed: January 8, 2002

a computer program storage device including a program of instructions usable by a computer  
to undertake logic comprising:

~~logic means for~~ receiving private information  $I_u$  upon registration with a content provider;  
~~logic means for~~ subscribing to at least one content channel provided by the content provider;  
~~logic means for~~ receiving at least one encrypted channel key  $K_c$  at least partially in response  
to subscribing to the channel;  
~~logic means for~~ deriving the channel key  $K_c$  using the information  $I_u$ ; and  
~~logic means for~~ using at least the channel key  $K_c$  to decrypt content streamed over the channel.

45. (currently amended) The computer program device of Claim 44, the logic further  
comprising:

~~plural device keys  $K_d$ ;~~  
~~logic means for~~ receiving at least one session key block;  
~~logic means for~~ deriving at least one session key  $K_s$  from the session key block using at least  
one of plural device keys  $K_d$ .

46. (currently amended) The computer program device of Claim 45, the logic further  
comprising:

~~logic means for~~ using the session key  $K_s$  and channel key  $K_c$  to derive a channel unique key  
 $K_{cu}$ ; and

1053-130.AM1

CASE NO.: ARC920010090US1

Serial No.: 10/042,652

March 31, 2008

Page 7

PATENT

Filed: January 8, 2002

~~logic means for~~ using the channel unique key  $K_{ca}$  to decrypt a title key  $K_T$  useful for  
decrypting the content.

47, 48 (canceled).

003-130.AM1